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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/560,819	04/28/2000	Hiroshi Oagawa	1982-0149P	5103

7590 10/21/2003
Birch Stewart Kolasch & Birch LLP
PO Box 747
Falls Church, VA 22040-0747

EXAMINER

ROY, SIKHA

ART UNIT PAPER NUMBER

2879

DATE MAILED: 10/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/560,819	OAGAWA, HIROSHI	
	Examiner	Art Unit	
	Sikha Roy	2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 September 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-8 and 10-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-8 and 10-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

The Amendment, filed on September 23, 2003 has been entered and is acknowledged by the Examiner.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1,3,5,7,8 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent 4,979,200 to Umemoto et al.

Regarding claim 1 Umemoto discloses (column 1 lines 58-68, column 2 lines 1-5) a radiation image conversion panel (radiographic intensifying screen) comprising phosphor layers containing stimuable phosphors (X-ray phosphors) and binder resin where the binder resin is unevenly distributed in the phosphor layer so that the amount of the binder resin to the stimuable phosphor in the uppermost layer (in the vicinity of the protective layer) is greater than that of the binder to the phosphor in the remainder of the phosphor layers. Umemoto further discloses (column 3 lines 25-30) that in order to obtain adequate adhesive strength between the uppermost phosphor layer and the protective layer the proportion of binder resin to stimuable phosphor is preferably at

least 4% by weight of the entire phosphor layers which is certainly more than 0.5 wt.% as claimed.

Claim 1 differs from Umemoto in that Umemoto does not disclose the limitation of "radiation image conversion panel produced by thermo-compressing two sheets which have been separately coated and dried ". The Examiner notes that this limitation is drawn to a process of manufacturing which is incidental to the claimed apparatus. It is well established that a claimed apparatus cannot be distinguished over the prior art by a process limitation. Consequently, absent a showing of an unobvious difference between the claimed product and the prior art, the subject product-by-process claim limitation is not afforded patentable weight (see MPEP 2113). Therefore, it is the position of the examiner that it would have been obvious to one of ordinary skill in the art that the radiation image conversion panel disclosed by Umemoto is at least a fully functional equivalent to the Applicant's claimed invention as evidenced by all of the Applicant's claimed structural limitations.

Referring to claim 3 Umemoto discloses the amount of the binder resin to the stimuable phosphor in uppermost layer is greater than that of the binder to stimuable phosphor in other layer by a range of from 4 to 8% by weight.

Referring to claim 5 Umemoto discloses (column 2 lines 24-50) the stimuable phosphor employable in the radiation image conversion panel includes bivalent europium activated alkaline earth complex fluoro-halide phosphor, a rare earth oxy-halide phosphor.

Regarding claim 7 and 8 Umemoto discloses (column 2 lines 60-68, column 3 lines 1,2) the thermoplastic elastomer binders can be selected from polyvinyl acetate, polyurethane, linear polyester.

Regarding claim 11 Umemoto discloses (column 4 lines 5-15) that coating dispersion layer of the phosphor having a low binder content is firstly coated and dried on a support and coating dispersion layer of the phosphor having a high binder content is coated and dried thereon. Although Umemoto does not disclose the thickness of the layers, the layers can very well be of same or different thickness.

Claims 4,10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent 4,979,200 to Umemoto et al. in view of U.S. Patent 5,519,228 to Takasu et al.

Claim 4 differs from Umemoto in that Umemoto does not disclose the wavelengths in the range of 300 to 500 nm of the radiation emitted from the stimulated phosphor when irradiated with rays of wavelength in the range of 400 to 900 nm.

Takasu in analogous art of radiation image conversion panel discloses (column 4 lines 25-31) a stimuable phosphor such as divalent europium activated alkaline earth metal halide phosphor giving a stimulated emission of wavelength in the range of 300 to 500 nm when it is irradiated with stimulating rays of wavelength in the range of 400 to 900 nm is employed. It is well known in the art of radiation image panel to employ radiation of 400-900nm wavelength passing through the object and sequentially exciting the phosphor in the panel.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to specify the wavelength of 400 to 900 nm of the irradiating radiation as taught by Takasu in the radiation image conversion panel of Umemoto. The stimuable phosphor used in the radiation panel of Umemoto being the same stimuable phosphor (divalent europium activated alkaline earth metal halide phosphor) as disclosed by Takasu would inherently emit radiation of wavelength in the range of 300 to 500 nm when irradiated by radiation of 400-900nm wavelength.

Regarding claims 10 and 12 Takasu discloses (column 5 line 66,67 column 6 lines 1-5) the stimuable phosphor layer has a thickness of 20 μm to 1000 μm , preferably 50 to 500 μm . It is well known in the art that the thickness of the phosphor layer is varied depending on the characteristics of the radiation image panel to be prepared, the nature of phosphors and the ratio of the binder to the phosphor.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent 4,979,200 to Umemoto et al. in view of U. S. Patent 5,789,021 to Dooms et al.

Claim 6 differs from Umemoto et al. in that Umemoto et al. do not exemplify the phosphor grain size ranging from 1 to 15 μm .

Dooms et al. in analogous art of manufacturing of luminescent article dispersed in binder disclose (column 5 lines 66,67, column 6 lines 1-7) the average grain size of the phosphor particles in the range of 2 to 20 μm . Dooms et al. further disclose that sharper images with less noise are obtained with phosphor particles of smaller mean particle size but light emission efficiency declines with decreasing particle size. The

optimum mean particle size for a given application is selected depending on the desired imaging speed and image sharpness.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to specify the grain size of phosphor particles of the panel of Umemoto et al. as suggested by Dooms et al. for desired image sharpness with improved noise. Umemoto et al. in view of Dooms et al. disclose the claimed invention except for the limitation of range of grain size of phosphor particles being from 1 to 15 μm . It has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. It would have been obvious to one having ordinary skill in the art at the time the invention was made to select the grain size of phosphor particles between 1 and 15 μm , since optimization of workable ranges depending on the desired image sharpness is considered within the skill of the art.

Allowable Subject Matter

Claim 13 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record fails to teach or suggest a radiation conversion panel having all the limitations as claimed in claim 13, particularly the limitation comprising the thickness of the uppermost layer increased relative to a layer beneath the uppermost layer.

Response to Arguments

Applicant's arguments filed September 23, 2003 have been fully considered but they are not persuasive. In response to applicant's argument that the references fail to show unexpected advantage of easy and independent control of binder/phosphor ratio in each layer of applicant's invention, it is noted that the features upon which applicant relies (i.e., improved immobilization of the binder between the layers and control of binder/phosphor ratio in each layer) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims.

In response to applicant's argument that Umemoto discloses different bonding method to make the radiation image conversion panel the Examiner notes that a claimed apparatus cannot be distinguished over the prior art by a process limitation. Consequently, absent a showing of an unobvious difference between the claimed product and the prior art, the subject product-by-process claim limitation is not afforded patentable weight (see MPEP 2113).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sikha Roy whose telephone number is (703) 308-2826. The examiner can normally be reached on Monday-Friday 8:00 a.m. – 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar D. Patel can be reached on (703) 305-4794. The fax phone number for the organization is (703) 308-7382.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

S.R.

Sikha Roy
Patent Examiner
Art Unit 2879


ASHOK PATEL
PRIMARY EXAMINER